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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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03/09/2006

Matthias Viehmann

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EXAMINER

WILLIAMS, DON J

ART UNIT

PAPER NUMBER

2878

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/571,181	VIEHMANN, MATTHIAS	
	Examiner	Art Unit	
	DON WILLIAMS	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-14, 16-19, 23-24, 26-28 is/are rejected.
- 7) ☒ Claim(s) 7, 15, 20-22 and 25 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 8-9, 19, 24, & 26-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Pinson (EP0359985).

As to claim 1, Pinson discloses (fig. 1, fig. 2) at least one electrical conductor formed as a single-wire or multi-wire line or cable (34), which connects devices (12, 18), subassemblies or circuit components of the piece of electrical equipment (12, 18) to one another, means (26) which guide the light that emerges when an arc (electrical power) is formed from the site of its formation to an optical/electrical transformer (62) and a monitoring and evaluating unit (20) electrically connected to the transformer (62) for evaluating the signals of transformer (62), is hereby characterized in that the means (26) which guide the light that emerges when an arc (electrical power) is formed to an optical/electrical transformer (62) involve at least one optical fiber (44) which envelops one or more wire cores of the electrical conductor (42) and thus simultaneously forms the electrical insulation (46) of a line or the shielding of a cable (34), (column 3, lines 30-40, column 4, lines 18-36, lines 45-52).

As to claim 2, Pinson discloses (fig. 1, fig. 2) that the arrangement responds to an arc (electrical power), which originates from the electrical conductor (42), whereby

Art Unit: 2878

the light originating from the arc (electrical power) is coupled to the optical fiber directly on the inside of the optical fiber (26, 44), (column 4, lines 44-52).

As to claim 3, Pinson discloses (fig. 1, fig. 2) that the arrangement responds to an arc (electrical power) which arises at a contact site (20, 60) of electrical conductor (42) with other units of the piece of electrical equipment (12, 18), this site being formed as a clamp or plug connection (60), whereby the optical fiber (26, 44) is guided into the contact site (60, 20) and the light originating from the arc (electrical power) is coupled axially to a front surface of the optical fiber (26, 44), (column 3, lines 30-35, column 4, lines 19-35, lines 45-52, column 5, lines 35-43).

As to claim 4, Pinson discloses (fig. 5A) means (60) for disconnecting the current through the circuit components of the piece of electrical equipment (30) that are affected by the arc (electrical power), and these means (60) are actuated or activated by the monitoring and evaluating unit (20) based on the detection of the arc (electrical power), (column 5, lines 53-56).

As to claim 5, Pinson discloses (fig. 2) that the optical fiber (44) enveloping the one or more wire cores of the electrical conductor (42) is enveloped by an additional electrically insulating cladding (46) that is not transparent to light, (column 4, lines 44-52).

As to claim 8, Pinson discloses (fig. 2) that the electrical conductor (42) that is structured as a wire or a cable (34) is enveloped by several optical fibers (44) separated by intermediate layers (40), (column 4, lines 45-52).

As to claim 9, Pinson discloses (fig. 2) that the combination conductor (42) formed

Art Unit: 2878

by the enveloping of the electrical conductor (42) with the optical fiber (44) is formed as a line that can be trimmed (tapered) in its length, (column 4, lines 44-52).

As to claim 19, Pinson discloses (fig. 1, fig. 2) that the optical fibers (44) of several electrical conductors (42) are guided onto an optical/electrical transformer (62), (column 4, lines 44-52).

As to claim 24, Pinson disclose (fig. 1, fig. 2) that the optical fiber (44) enveloping the electrical conductor (42) serves both for the coupling of the light of a possible arc (electrical power) as well as for the transmission of other useful signals within the monitored piece of electrical equipment (30), (column . 4, lines 25-50).

As to claim 26, Pinson disclose (fig. 1, fig. 2) that the optical/electrical transformer (62) and light-emitting components via transceiver (20) present in the case of using optical fiber (26, 34, 44) for the transmission of useful signals are coupled by means of a slot/clamping technique for coupling and uncoupling light from the outside to the wave guide (26), wherein they are impressed into the wave guide (26) by a claw-like formation with projecting optically active elements, (12, 18), (column 4, lines 18-40, lines 45-50, column 5, lines 35-42).

As to claim 27, Pinson discloses (fig. 1, fig. 2) that information is exchanged between optical/electrical transformer (62) and monitoring and evaluating unit (20, 22) via an electrical conductor (34, 42) enveloped by an optical fiber, (26, 44), (column 4, lines 18-28, lines 45-50).

As to claim 28, Pinson discloses (fig. 1, fig. 2) that information is exchanged between optical/electrical transformer (62) and monitoring and evaluating unit (20, 22)

Art Unit: 2878

via a power line (26, 34) serving simultaneously for the power supply (24) of the monitored piece of electrical equipment (20, 22), (column 4, lines 18-28, lines 45-50).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP035985) in view of Di-Vita (4,134,639).

As to claim 6, Pinson discloses (fig. 2) core (36) to define the inner part of the fiber, and outer cover (38) to define the outer cladding of the fiber, (column 4, lines 25-29). Pinson is silent to explicitly disclose that the inner surface of the additional outer cladding is structured in an optically reflecting manner and light reflecting foil. Di-Vita discloses light guides with internally reflecting boundaries (i.e. fibers or foils) between which a transparent body of graded refractive index is interposed, (Abstract, column 1, lines 11-25). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Di Vita to use fiber with internally reflecting foils as a means of transmitting and reflecting light within the inner fiber core resulting in improving the detection of the transmission of arcs or sparks within the device.

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP0359985) in view of Stenerhag et al (4,464,700).

As to claim 10, Pinson discloses (fig. 2) an optical fiber (44), and an electrical insulation (46), (column 4, lines 44-52). Pinson is silent to explicitly disclose the optical fiber function simultaneously as insulation or shielding consists of polymer. Polymers are well known in the art for the formation of optical fibers and insulation material. Stenerhag et al discloses (fig. 6) that the outer insulation (42) comprises a mat of fibers of a polymer such as polyethylene or polypropylene, (column 7, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Stenerhag et al to use any type of polymer properties as claimed in order to form a durable optical fiber resulting in insulation used to encase conductive wirings.

As to claims 11-13, Pinson discloses (fig. 1, fig. 2) optical fiber (26, 44), (column 4, lines 21-28). Pinson is silent to explicitly disclose that optical fibers consist of polymethyl methacrylate, polymethylpentene and polycarbonate. Polymers are well known in the art for the formation of optical fibers. Stenerhag et al discloses (fig. 6) that the outer insulation (42) comprises a mat of fibers of a polymer such as polyethylene or polypropylene, (column 7, lines 19-21). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Stenerhag to use any type of polymer properties as claimed in order to form a durable optical fiber resulting in insulation used to encase conductive wirings.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP0359985) in view of Ostromek et al (US2005/0094270).

As to claim 14, Pinson discloses (fig. 1) and optical/electrical transformer (62), (column 1, lines. Pinson is silent to explicitly disclose that filters are used for suppressing the effect of extraneous light. Ostromek et al disclose (fig. 1) an optical transformer (30a, 30b) may comprise any device operable to perform an optical transform of light, for example, a lens, a filter, or an electro-optical element, (paragraph [0013]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Ostromek et al to include the filter in an optical transformer in order to allow selective light to pass and suppress or block out extraneous light resulting in improving the performance of the device.

Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP0359985).

As to claim 16, Pinson discloses that the optical/electrical transformer (62) can be connected onto an axial end of the optical fiber (26) via a breakaway electrical connector (60) as illustrated in fig. 1, (column 5, lines 54-56). Pinson is silent to explicitly disclose that the optical/electrical transformer can be screwed on. It is well known in the art that connecting, clamping or attaching components to each other is functionally equivalent or serve the same purpose of screwing on components to each other respectively in that a means for connecting the components is developed or formed. It

Art Unit: 2878

would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connecting structure as taught by Pinson as a means to attach or screw the optical fiber to the optical/electrical transformer via the breakaway connector in order to improve the accurate detection of an arc or spark resulting in shutting down the device to avoid system damage.

As to claim 17, Pinson discloses (fig 1) that the optical/electrical transformer (62) is connected in the optical fiber via the breakaway electrical connector (60), (column 5, lines 53-56). Pinson is silent to explicitly disclose the optical/electrical transformer is sealed. It is well known in the art that connecting, clamping or attaching components to each other is functionally equivalent or serve the same purpose of sealing components to each other respectively in that a means for connecting the components is developed or formed. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the connecting structure as taught by Pinson as a means to attach or seal the optical fiber to the optical/electrical transformer via the breakaway connector in order to improve the accurate detection of an arc or spark resulting in shutting down the device to avoid system damage.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP0359985) in view of Kurz et al (4,424,147).

As to claim 18, Pinson discloses (fig. 1) an optical fiber (44), and an optical/electrical transformer (60), (column 4, lines 44-52). Pinson is silent to explicitly disclose the optical/electrical transformer consist of polymer. Polymers are well known

in the art for the formation of transformers. Kurz et al disclose that conductors in transformers are often insulated with polymers such as parylene, (column 1, lines 38-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Kurz et al to use the polymer in order to construct an optical/electrical transformer resulting in improving the durability of the transformer.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pinson (EP035985) in view of Baker (3,618,526).

As to claim 23, Pinson discloses (fig. 1) optical fibers with long line lengths, (column 4, lines 5-7). Pinson is silent to explicitly disclose light intensifiers. Baker discloses (fig. 1) fiber-optic light intensifier (19) consisting of a plurality of tapered optical fibers, (column 2, lines 50-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pinson in view of Baker to incorporate the fiber-optic light intensifier in order to reduce the impinging coherent light beam and increase the output of radiant energy intensity per unit area resulting in improving the performance of the device, (column 2, lines 52-54).

Allowable Subject Matter

Claims 7, 15, 20, 21, 22 & 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to teach either singly or in combination that the optical/electrical transformer is constructed in the form of a cap that can be attached to an axial end of the optical fiber or as a disk that can be pushed open, whereupon the electrical conductor projects through the cap or the disk, the optical/electrical transformer is formed as a CCD line, an axial end of an optical fiber that is not sealed off by an optical/electrical transformer mirror-coated or is provided with a reflecting cap, optical emitter disposed in a reflecting for conducting a self-test of the arrangement, wherein the cap is formed as a semi-transparent mirror, which is transparent to light emitted from the optical transmitter disposed in the cap, and that optical signals are differentiated with the help of reference curves filed in the monitoring and evaluating unit for different types of accidentals arcs.

Response to Arguments

Applicant's arguments with respect to claims 1-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DON WILLIAMS whose telephone number is (571)272-8538. The examiner can normally be reached on 8:30a.m. to 5:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2878

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Don Williams/
Examiner, Art Unit 2878

/Georgia Y Epps/
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Unit 2878